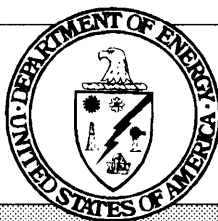
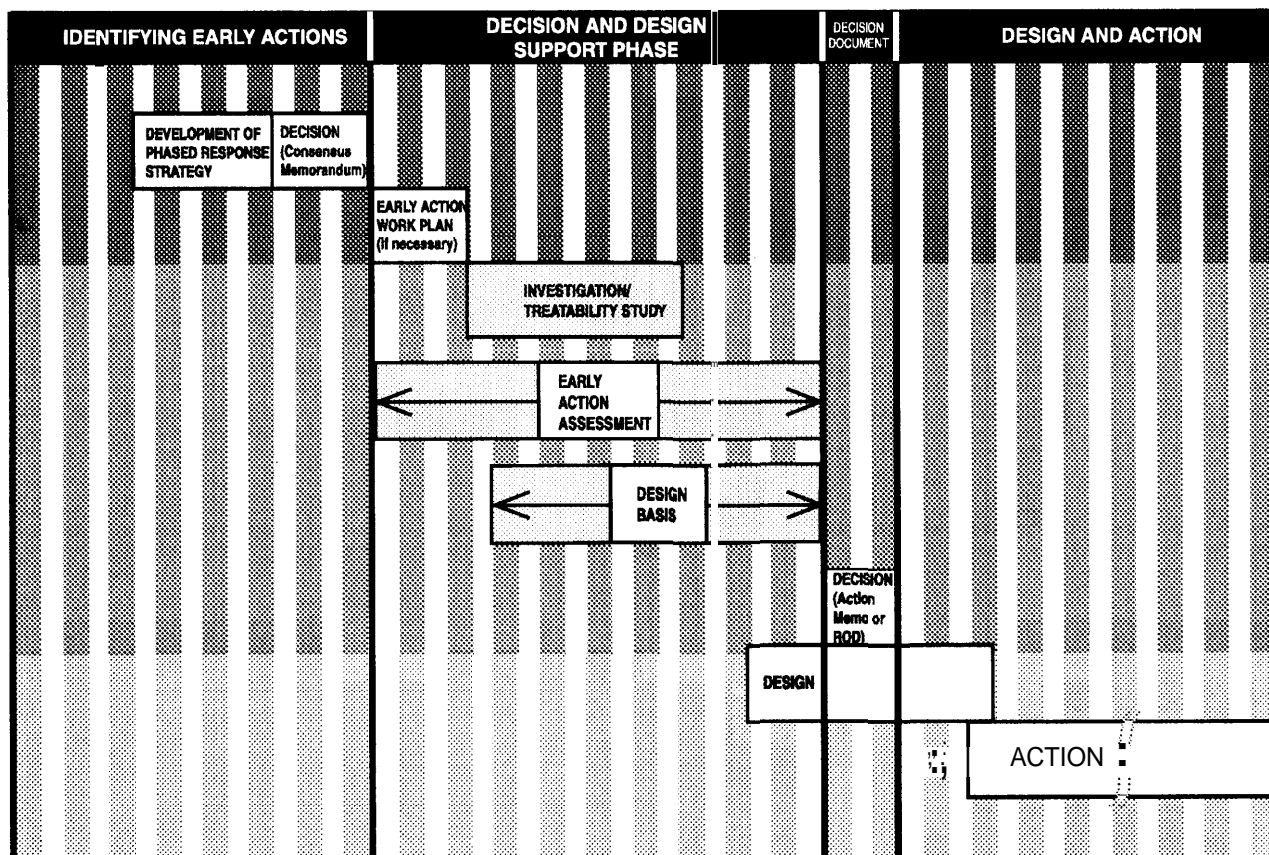


Environmental



Guidance

Phased Response/ Early Actions



U.S. Department of Energy
Washington, D.C.

Office of Environmental Activities
(EM-22)

Office of Environmental Policy & Assistance
RCRA/CERCLA Division
(EH-413)

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memorandum

DATE: November 22, 1995

REPLY TO~

ATTN OF: **Office of Environmental Policy and Assistance**(EH-413): Dailey :6-7117

SUBJECT: **PHASED RESPONSE/EARLY ACTIONS UNDER CERCLA**

TO: Distribution

**PURPOSE OF
THIS MEMO**

This memorandum transmits the environmental guidance document *Phased Response/Early Actions under CERCLA*, prepared by the Office of Environmental Policy and Assistance, RCRA/CERCLA Division (EH-413) with support from the Office of Environmental Activities (EM-22).

BACKGROUND

The National Contingency Plan (NCP), the Environmental Protection Agency (EPA) Superfund Accelerated Cleanup Model (SACM), and the joint EPA/DOE/DOD "Guidance on Accelerating CERCLA Environmental Restoration at Federal Facilities" encourage the use of *early actions* (time critical and non-time critical removal actions/ interim remedial actions) to achieve timely risk reduction at contaminated sites.

The EPA "Guidance for Evaluating the Technical Impracticability of Groundwater Restoration" promotes the use of both early actions and longer-term actions in a "phased approach."

The above regulations and guidances align with the Office of Environmental Management's strategic objective to aggressively use early actions to achieve quick, cost-effective risk reduction.

**OBJECTIVE
OF GUIDANCE**

This environmental guidance document explains how to:

- determine which site problems are candidates for early actions
 - determine which early action authority (removal or remedial) would be best for a particular contaminated site scenario
- develop and document a phased response strategy to implement early actions under the two remedial authorities
- development of aggressive phased response/early action strategies are fully compliant with CERCLA legislation, regulation and guidance

Also, examples (including sample documentation) on how DOE sites have used a phased response/early action strategy are provided.

RELATED
GUIDANCE

The attached environmental guidance document is the second in a three-part series being developed by EH-413 in collaboration with EM. The first document in this series "Remedial Investigation/ Feasibility Study (RI/FS) Process, Elements and Techniques" was published in December 1993 (DOE/EH-94007658), and the third document to be issued in late 1996, will address environmental restoration implementation issues associated with Remedial Design/Remedial Action (RD/RA) under CERCLA. This series of environmental guidance documents serve as a *continuing reference work* that can be consulted for information and instruction on the conduct of CERCLA compliant, accelerated cleanup activities under the Streamlined Approach for Environmental Restoration (SAFER).

INTENDED
AUDIENCE

DOE personnel with management/oversight responsibility for environmental restoration activities conducted under CERCLA.

Contractor personnel responsible for developing and implementing those activities.

Federal and State regulatory personnel with oversight responsibility for DOE sites.

Stakeholders and others with an interest in the DOE environmental Restoration program.

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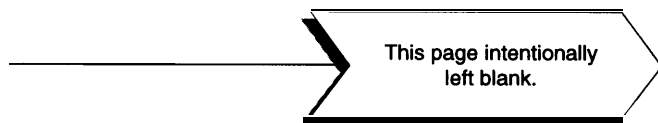
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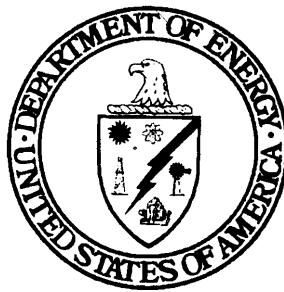
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 Remedial Action Program Information Center
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PHASED RESPONSE/

*under the
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(CERCLA)*



NOVEMBER 1995

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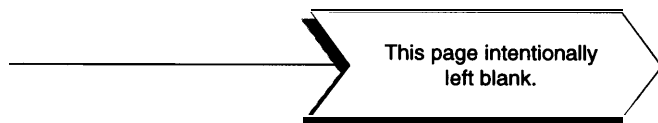
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Acknowledgements

This document was developed by the Department of Energy's Office of Environmental Policy and Assistance (EH-41) within the Office of Environment, Safety and Health, and the Office of Environmental Activities (EM-22) within the Office of Environmental Management. Technical support was provided by Project Performance Corporation, EG&G Environmental, Incorporated, and CH2M HILL, Incorporated. The project team included DOE Project Manager Rich Dailey (EH-41), Technical Project Manager Jeff Smyth (Project Performance Corporation, Richland, Washington), Craig Cheney (Project Performance Corporation, Sterling, Virginia), Steve Wilhelm (EG&G Environmental, Corvallis, Oregon) and Technical Writer Gail Payne (CH2M HILL, Oak Ridge, Tennessee). Larry Helm (CDM Federal programs, Oak Ridge) and Gaynor Dawson (EG&G Environmental, Richland, Washington) acted as Senior Technical Reviewers.

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Acronyms

ADS	activity data sheet
AEC	Atomic Energy Commission
ARARs	applicable or relevant and appropriate requirements
BDAT	best demonstrated available technology
BGS	below ground surface
CAMU	Corrective Action Management Unit
CDD	Conceptual Design Document
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CM	consensus memorandum
CRP	Community Relations Plan
CWA	Clean Water Act
cy	cubic yard
D&D	decontamination and decommissioning
DOE	Department of Energy
DQO	data quality objective
EA	Environmental Assessment
EDC	engineered drainage channel
EE/CA	Engineering Evaluation/Cost Analysis
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ER	Environmental Restoration (DOE Program)
ESA	Endangered Species Act
FFA	Federal Facilities Agreement

FFS	Focused Feasibility Study
FID	flame ionization detector
FONSI	Finding of No Significant Impact
FSP	Field Sampling Plan
gpd	gallons per day
gpm	gallons per minute
GW	groundwater
HP	health physics
HSP	Health and Safety Plan
ID	Idaho Field Operations
IDW	investigation-derived waste
INEL	Idaho National Engineering Laboratory
IRM	interim remedial measure
LDR	land disposal restriction
LFI	limited field investigation
LLW	low-level waste
LSA	low specific activity
MCL	Maximum Contaminant Level
M&O	management and operating (contractor)
mph	miles per hour
MSA	Major Systems Acquisition
msl	mean sea level
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act
NFA	no further action
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System

NPL	National Priorities List
NRC	Nuclear Regulatory Commission
NTS	Nevada Test Site
NWS	National Weather Service
O&M	Operations and Maintenance
O.A.C.	Ohio Administrative Code
Osc	On-Scene Coordinator
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
Ou	operable unit
PA	Preliminary Assessment
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PEW	process equipment waste
PID	photoionization detector
POLREPS	pollution reports
ppb	parts per billion
PPE	Personal Protective Equipment
ppm	parts per million
PRG	Preliminary Remediation Goal
PRS	potential release site
QAPP	Quality Assurance Project Plan
QA/QC	quality assurance/quality control
RA	Remedial Action
RAGS	Risk Assessment Guidance for Superfund
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act

RDIRA	Remedial Design/Remedial Action
RESRAD	Residual Radioactive Material Program
RI/FS	Remedial Investigation/Feasibility Study
ROD	record of decision
RSE	Removal Site Evaluation
RWMC	Radioactive Waste Management Complex
RWP	radiation work permit
SACM	Superfund Accelerated Cleanup Model
SAFER	Streamlined Approach For Environmental Restoration
SAP	Sampling and Analysis Plan
SRE	streamlined risk evaluation
TNT	trinitrotoulene
TOX	total organic halogen
TRU	transuranic
TSA	temporary storage area
TSCA	Toxic Substances Control Act
TSD	treatment, storage, and disposal
TSF	temporary storage facility
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
WAG	Waste Area Grouping
WSSRAP	Weldon Spring Site Remedial Action Project

Document Use

Audience

This guidance document is primarily intended for Department of Energy (DOE) personnel with line-management responsibility for environmental restoration efforts conducted pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) at DOE facilities. It describes in detail the components of a phased response, explains how each component should be conducted and what should be accomplished, and defines what documents need to be produced to expedite actual cleanup of site problems. The document also is applicable for use by DOE contractors responsible for the technical development of actions that make up a phased response, and by those technical staff, whether DOE employees or contractors, who review early action documents for technical and regulatory adequacy.

The document incorporates the principles of the Streamlined Approach For Environmental Restoration (SAFER). SAFER is an approach for remediating specific site problems through focused definition of site problems, reasonable deviations to those problems, decision rules, and contingency plans. One of the fundamental precepts of the SAFER process is that stakeholders [defined as DOE, DOE's Federal and State regulators, other interest groups (e.g., Native Americans), and the public] must be intimately involved in the conceptualization and development of strategies and in the many decision points along the way toward their completion. In this regard, this document should also be of interest to the stakeholders participating in early action compliance at DOE facilities. Because this guidance lays out the general steps and methods that should be used in any DOE phased response, it can serve as a map to the process and as a guide to where the stakeholders can expect opportunities to participate in the evaluations and decisions that are critical to the process.

As with other DOE guidance documents, this document refers to three levels of persons who are involved in planning and conducting environmental restoration projects: (1) the internal project team, composed of DOE and its contractors (2) the extended project team, which includes the internal project team, the U.S. Environmental Protection Agency (EPA) and State regulatory staff, public interest group that have decisionmaking authority, and others with direct technical expertise or a significant stake in the project result; and (3) other stakeholders.

Format

The elements of a phased response are different types of removal and remedial actions. This document focuses specifically on those that are early actions [i.e., any non-final action (for example, removals and early/interim remedial)]. This document and the strategy provided herein group early actions according to the timing in which they might be performed and the urgency with which they are performed. Thus, the four modules of this guidance address (1) phased response strategy, (2) contingent removal action approaches, (3) time-critical removal actions, and (4) non-time-critical removal actions and early remedial actions.

All these types of actions provide opportunities for streamlining the planning/investigation phase and the actual remediation phase. This guidance focuses on the planning/investigation/remedy selection activities. Implementation of environmental restoration efforts will be the subject of a future companion document, DOE's Environmental Restoration Design and Implementation Guidance.

The format for presenting the discussions and information in this guidance was developed specifically for preparing DOE guidance documents. It is a way to present information on complex regulatory requirements in an accessible manner. Using flowcharts, step-by-step instructions, and detailed examples, the format distills statutory and regulatory requirements and guidance into essential concepts and logical steps necessary to meet the requirements.

This format reserves the left-hand page for graphics (e.g., flowcharts, icons). The graphic pages are used primarily to provide a quick reference to find information of interest. When a graphic is not appropriate for the left-hand page, the reader is informed that the page was “intentionally left blank.” Right-hand pages are reserved for text.

Information is arranged in modules, each representing a major aspect of the project. Completing the steps in a module culminates in producing a major report or other product required in the process. Modules may be divided into submodules. Each submodule begins by graphically illustrating its main contents on a left-hand page. The supporting text page on the right provides background information, organization of the module, and relevant references. Each submodule includes flowchart graphics on a left-hand page that illustrate the main elements of the submodule as steps in process flowcharts. Detailed information on each step is provided on the facing right-hand pages. The distilled information provided in the flowcharts and in the steps is followed by technical notes on certain aspects of the process. Notes provide more detailed supporting guidance than is provided in the process steps. Notes include examples, outlines, checklists, and expanded technical discussions with marginal notes. The graphical format used in this document is shown in the figures on pp. xi and xii.

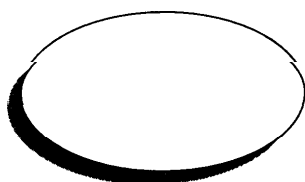
Cross references are provided between modules where necessary to show the connections between steps. The references may be at any level (e.g, module to module, submodule to submodule, step to module, note to module).

Document Graphics

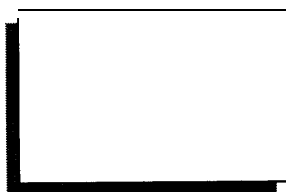
Graphics are central elements of this guidance document. The graphics are used to help guide users through the Phased Response process, provide key information, and illustrate supporting materials.

Graphics concepts include flowcharts, icons, examples, and information boxes.

Symbols used in this document observe the following conventions:



Ovals represent the beginning or end of a flowchart.



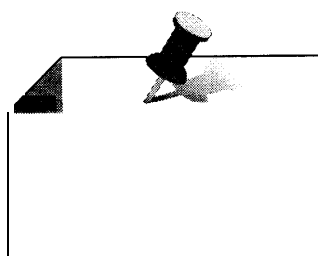
Solid Line Rectangles indicate an action that must be completed.



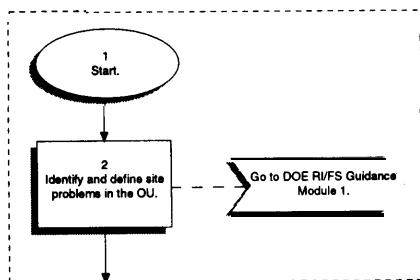
Thin Dashed Line Rectangles contain notes "continued on" or "continued from." Read the notes for guidance through flowcharts.



Solid Line Arrow Polygons represent "go to" statements. Information given in the arrow will provide detail on where to proceed.



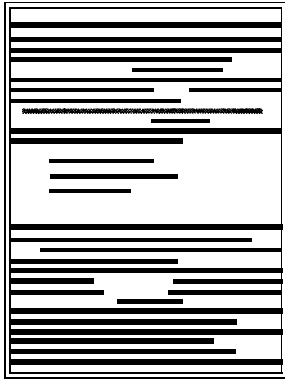
Note Pad Icons contain information that may be key text, a cross reference in the guidance, a key reference document, or other concepts that require special note. No action is associated with Note Pad Icons.



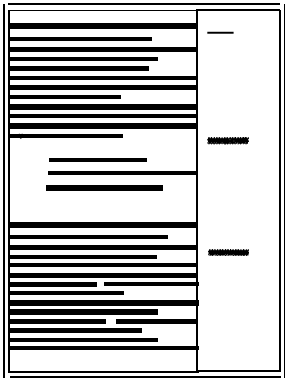
Compressed Icons provide a summary of steps on previous pages.

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Notes With a Double Border are to distinguish them from regular text. Notes provide detailed information on specific topics.

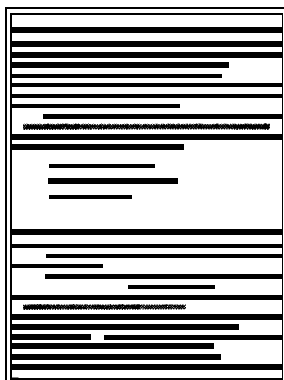


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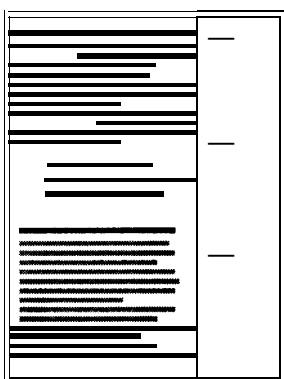
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- These notes may be edited, unedited, or excerpted.
- Marginal comments identify significant elements of the note.

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- These illustrative examples are from actual reports.
- These notes may be edited, unedited, or excerpted.
- Marginal comments identify significant elements of the note.



Introduction

Introduction	
1	Phased Response Strategy
2	Contingent Removal Action Approaches
3	Time-Critical Removal Actions
4	Non-Time-Critical Removal Actions and Early Remedial Actions

Introduction	
•	Background
•	Phased Response
.	Assumptions
•	Relationship to Other Streamlining Initiatives
o	Specific CERCLA Authorities Allowing a Phased Response
•	Specific Advantages for Using a Phased Response
•	Applying a Phased Response Strategy

Introduction

The Department of Energy's (DOE's) Office of Environmental Policy and Assistance (EH-41) within the Environment, Safety and Health organization and Office of Environmental Activities (EM-22) within the Environmental Management organization have issued this document to provide implementation guidance on developing strategies for early actions, planning for early actions, and conducting early actions. This guidance is primarily intended for DOE personnel with line-management responsibility for environmental restoration efforts conducted pursuant to Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) activities at DOE facilities. It describes in detail how to plan and implement early actions in a phased manner.

This is a companion document to DOE's *Remedial Investigation/Feasibility Study (RI/FS) Process, Elements and Techniques Guidance* (henceforth, DOE's RI/FS guidance). It builds on the explanations and direction provided in DOE's RI/FS guidance and frequently refers the reader to that document for further detail. Together, these two documents provide guidance for conducting CERCLA activities prior to a final Record of Decision (ROD) and provide a foundation for designing and implementing actions.

EH-41 has also issued *CERCLA Removal Actions* (DOE/EH-0435; DOE, 1994), which provides detailed guidance on the regulatory process for emergency, time-critical, and non-time-critical removal actions. It should be used to supplement this guidance.

Background

DOE facilities such as Hanford, Savannah River, and Idaho National Engineering Laboratory are large and complex; even DOE's smaller facilities are complex relative to non-federal facility National Priorities List (NPL) sites. Most of DOE's facilities are scheduled to take many years to remediate. DOE's goal is to accelerate the cleanup process wherever possible. The most direct way of accelerating remediation is to identify those site problems that are more critical or immediately solvable and take those actions first.

Most DOE facilities have been divided into groups of potential site problems, variously called operable units, waste area groupings, and other terms. For facilities on the NPL, each of these operable units is in some stage of the CERCLA process, on its way to being completely remediated. The goal for each operable unit is to reach a final decision point that is protective of human health and the environment. This final decision for an operable unit will sometimes be to take no further action; other times specific further action is necessary.

But, it is not necessary to put off all remediation until every detail of an operable unit is understood and the stakeholders are prepared to decide everything in a single ROD. Almost any operable unit is likely to include site problems that are more critical or are simpler than the rest, some things that can and should be addressed before the final decision is made for the entire operable unit. Identifying and pursuing such opportunities for early actions is the focus of this document.

Phased Response

Because operable units tend to include a variety of site problems, a response that uses various types of approaches will often prove best. CERCLA offers several types of response actions, under different authorities, to suit differing needs, from emergency removals to final remedial actions. These actions go by a variety of informal names at various DOE facilities and Environmental Protection Agency (EPA) Regions, as discussed further below. But, in this document, they are divided into just five types of actions:

- **Emergency removal actions.** Actions taken under CERCLA Section 104 Authority to respond to acute site problems.
 - **Time-critical removal actions.** Actions taken under CERCLA Section 104 Authority to respond to site problems that require less than 6-months planning prior to field implementation.
 - **Non-time-critical removal actions.** Actions taken under CERCLA Section 104 Authority to respond to site problems that require more than 6-months planning prior to field implementation.
- Early remedial actions.** Actions taken under CERCLA Section 106 Authority to respond to site problems prior to a final ROD for an operable unit. Early remedial actions can be final resolutions to individual site problems or interim resolutions to individual site problems.
- **Final remedial actions.** Final actions taken under CERCLA Section 106 Authority documented in the ROD that addresses all site problems in an operable unit. Final remedial actions are used (in this document) to make ultimate cleanup decisions for all the individual site problems within an operable unit, including those addressed by early actions.

The first four types are termed early actions.

This guidance encourages use of a phased response to remediating operable units: using early actions to address the more obvious or more easily remediable problems, leaving the more complex or lower risk problems to final actions after the final ROD is signed. By developing a phased response strategy that incorporates early actions wherever feasible, any operable unit can be moved more quickly both to effective reduction of the most significant risks and to a final ROD and complete remediation.

A phased response uses a sequence of early and final actions to tackle the numerous problems presented by a typical operable unit. A phased response strategy identifies each of the separable problems in the operable unit and assigns to each one of these actions tentative dates for initiating and completing the action.

A phased response includes the overall investigation (RI/FS) of the operable unit that leads toward the final ROD for remedial actions. There is a helpful synergism between the early actions and the more comprehensive progress toward complete remediation of the operable unit. The RI/FS is used to identify site problems amenable to early action and can provide data and insight to early actions. And, as each early action is undertaken (perhaps preceded by a limited investigation), more is learned about the site, which adds to the knowledge gained through the RI and FS. Thus the results of the early actions can help in focusing or strengthening the RI/FS and the final ROD.

Assumptions

Certain assumptions are inherent in the concepts and strategies presented in this guidance:

- **Early actions are advantageous.** Achieving remediation sooner is an advantage all by itself and can be a legitimate objective of an early action.
- **Early actions should be based on consensus between DOE and its regulators.** Although DOE has authority in many instances to pursue removals without formal concurrence of its regulators, the consensus on the need for an early action is valuable in all instances and should be sought wherever possible. A consensus memorandum is used

to document DOE and regulatory agency agreement to take action to resolve a site problem.

- **The need to conduct early actions can be based on a variety of factors.** DOE and regulatory agencies can reach consensus on the need to take action on the basis of multiple factors including historical knowledge, lack of complete exposure pathway, existing site standards [e.g., decontamination and decommissioning (D&D), cleanup levels] and precedence, and background levels (natural and man-made).
- **Formal risk assessment is not required to identify the need for early actions.** Health risk associated with a site problem is one but not the only factor that may be used for deciding to take early action. When the decision to take action is based on risk, the risk evaluation procedure does not need to be a formal baseline risk assessment. Submodule 1.1, Note B provides an example process for determining whether early action is necessary. Formal risk assessment (e.g., baseline risk assessment) is conducted as part of the RI/FS process for site problems that are not addressed through early action. For guidance on conducting risk assessments see DOE's RI/FS guidance (DOE, 1993).

The purposes of the rest of this introduction are to discuss how the concepts in this guidance (i.e., phased response and early actions) are consistent with other efforts to streamline environmental restoration, to introduce the legal authorities that make up a phased response, and to summarize the specific streamlining advantages that a phased response offers.

Relationship to Other Streamlining Initiatives

The use of early actions during environmental restoration is not a new concept. The National Oil and Hazardous Substances Pollution Contingency Plan's (NCP's) bias for action and the discussions found in EPA's RI/FS guidance as well as in DOE's RI/FS guidance encourage the use of early actions. However, early actions have not been commonly used in the DOE complex, in part because of a lack of clear understanding of their usefulness and advantages; methods for combining these actions into a phased response have not been articulated for all potentially contaminated media. NCP support for the use of a phased response is found in Note A to this Introduction.

For groundwater, a cornerstone of the EPA's streamlining philosophy is an approach described in *Guidance for Evaluating Technical Impracticability of Ground Water Remediation* (OSWER Directive 9234.2-24) and *Considerations in Ground-Water Remediation at Superfund Sites and RCRA Facilities* (OSWER Directive 9283.1-06). These documents encourage "early actions to control plume migration and remove contaminant sources, reducing risks and providing information useful in identifying the restoration potential of the site." EPA also notes that "phasing of activities does not lengthen or deter the remediation process; rather if approached properly, phasing of activities should expedite the process by reducing risk and by bringing final cleanup levels closer to completion of the RI/FS." DOE recognizes that these concepts are valuable for all media and seeks to develop a similar logical framework for phasing actions.

In addition to existing guidance on best use of early actions, EPA and DOE have taken several initiatives to streamline actions and encourage their more frequent use. This guidance is consistent with and supports the initiatives discussed below.

Superfund Accelerated Cleanup Model. EPA has initiated a CERCLA streamlining initiative, the Superfund Accelerated Cleanup Model (SACM) program, which uses removal authorities at remedial sites to achieve earlier risk reduction and to increase the efficiency of actions. Principles of the SACM program are as follows:

- Provide an ongoing process for evaluating site-specific conditions and need for action.
- Allow for cross-program coordination of response planning.
- Facilitate prompt risk reduction through early action.
- Ensure appropriate cleanup of long-term environmental problems.
- Ensure early public notification and participation.
- Define conditions where removal actions are appropriate.

SACM principles are met through the phased response presented in this guidance. For example, DOE's phased response emphasizes prompt risk reduction through early action, public notification and participation, and defining conditions where removal actions are appropriate. Module 1, Phased Response Strategy, elaborates on these points.

RCRA Stabilization Initiative. For Resource Conservation and Recovery Act (RCRA) actions, EPA has developed a stabilization initiative that is similar to SACM but relies on different statutory and regulatory preferences for action. Stabilization initiatives generally rely on well-understood technologies to limit the migration of contaminants, to reduce immediate threats, and to contribute to understanding the range of existing problems. DOE is preparing a separate guidance on accelerating RCRA corrective actions at DOE facilities; they are not discussed further in this guidance.

Presumptive and Generic Remedies. EPA has developed presumptive remedies for certain types of site problems commonly occurring at the Superfund Sites. These remedies are supported by a National Administrative Record that facility managers can use to streamline work plan development, definition and selection of alternatives, and remedy selection. Generic remedies are similar to presumptive remedies, but are less formal and not supported by National Administrative Records. Examples of generic remedies are technology matrices, which summarize the potential applicability of technologies but not in enough detail to be considered an administrative record. Presumptive and generic remedies should be used when appropriate in a phased response.

SAFER. DOE has developed the Streamlined Approach For Environmental Restoration (SAFER) as its own streamlining initiative. SAFER specifically addresses management of uncertainties during remediations at DOE facilities. SAFER combines (1) the data quality objective (DQO) process objective of reducing uncertainty in measuring and interpreting data with (2) the observational approach objective of managing uncertainty in implementing alternatives. SAFER's tenets are integrated in DOE's RI/FS guidance and in this guidance.

Specific CERCLA Authorities Allowing a Phased Response

Authorization for early actions comes from two sections of CERCLA: removal authority from Section 104 and remedial authority from Section 106. The distinction between these two authorities is not greatly significant in the DOE Environmental Restoration (ER) program because DOE is the lead agency and the same EPA and State regulatory staff are generally involved in the oversight function. However, a necessary step under CERCLA is to declare which authority is being used. Many site problems can be addressed by either authority, although some Federal Facilities Agreements (FFAs) may restrict this flexibility. Procedural and documentation differences exist depending on which authority is used. Where flexibility among authorities exists, facility managers need to consider the advantages of each authority in making decisions.

Specific Advantages for Using a Phased Response

The inherent advantages of early actions constitute powerful arguments for the extended project team and other stakeholders in supporting the use of a phased response. These expected advantages can also be used as benchmarks for measuring the success of a phased response. The advantages include the following:

Expedite actions. A phased response can result in actions that overall are quicker and more efficient (thereby expediting the process) in several ways. This more efficient use of resources (e.g., less data collection, less alternatives development, and better tailoring of the action to the site problems) also allows the final RI/FS to be focused on the more complex problems that remain after the early actions are completed.

A phased response also emphasizes opportunities for parallel or concurrent conduct of several activities that are historically carried out sequentially (e.g., investigation, decision, design). A particular emphasis of the phased response is to complete preliminary remedial design documents prior to completing decision documentation. By using data and documents to serve multiple purposes, a phased response can reduce the overall time needed to move through an investigation and to begin actual remediation.

Reduce risks. Early actions can limit exposure and halt migration of contamination quicker than comprehensive RI/FS/Remedial Design/Remedial Action (RD/RA) approaches. This directly supports the main intent of CERCLA and the NCP. Early protectiveness is usually the strongest justification for developing or implementing a phased response strategy. A phased response should always identify opportunities for early risk reduction, and can begin actual progress toward meeting cleanup goals even if comprehensive designs for facility land use have not been made.

An additional advantage of a phased response exists where final solutions (e.g., treatment technologies, waste disposal) for a site problem are not yet available but where wastes pose a current (or near-term future) risk to the environment, workers, or other receptors. DOE faces many such situations (e.g., radioactive wastes). Where such situations exist (e.g., radionuclide-contaminated soils), a final ROD would likely require delay of a solution until the technology was developed or constructed or until a final waste management decision was made. The phased response facilitates interim risk reduction through such activities as removal and storage. Although a phased response may result in implementability issues, such as the need for interim storage capacity, and may result in additional Operations and Maintenance (O&M) costs to maintain compliance, careful definition of the problems to be addressed with an early action (e.g., a priori agreements about the definitions of contaminant concentrations that constitute hot spots or unacceptable risks and the amount of wastes that will be excavated) can offset these problems and improve the overall effectiveness of the entire environmental restoration program for the operable unit.

Demonstrate progress. Phased responses show earlier progress (e.g., implementing actions) to the stakeholders than the comprehensive CERCLA approach because they result in early cleanup of actual problems. Demonstrating early progress may be enough reason to implement a phased response, providing the action is cost effective.

Another advantage of a phased response is building momentum that leads to an improved overall process for conducting environmental restoration. Even small accomplishments achieved under a phased response can build momentum for additional progress, in many instances leading to a new or even more logical approach to addressing whole operable unit or facility-wide environmental remediation challenges.

A phased response can also show progress by providing an avenue for testing new techniques, management approaches, or even technologies. CERCLA already encourages the use of treatability studies for trying new technologies. In some instances, a treatability study can be incorporated as part of a phased response. If a technology proves useful and effective, the phased response also provides a forum for continuing the technology (as an early action) before a final remediation decision is made.

Respond to stakeholder and other Priorities. Integrating stakeholder concerns and incorporating new information learned during a phased response may lead to changes in the priorities for addressing site problems. A phased response process provides a forum for responding to stakeholder concerns. For example, on the basis of stakeholder concerns, several DOE facilities have made significant changes in the priority given under original plans to remediate certain site problems most amenable to early transfer for public or other non-DOE uses. A phased response provides the flexibility to address these changing priorities quickly and efficiently.

Reduce costs. A phased response leads to cost reduction similar to the ways in which it contributes to expediting an action. There are three cost-reducing impacts. First, a phased response leads to better focused studies of reduced scope (i.e., not final) that generally require fewer data to support decisions. Second, by selecting the most appropriate authority, actions are commensurate with the complexity of the problem. That is, a comprehensive RI/FS is not needed to select a remedy for a problem with a relatively obvious solution. Third, by allowing for the concurrent preparation of remedial design documents, the overall amount of time can be reduced for preparing documents and conducting actions. This results in lower overall program costs.

Applying a Phased Response Strategy

Environmental restoration programs are implemented at three levels: (1) facility-wide through program or management plans or agreements, often in the form of an FFA or other strategic planning process; (2) operable units, which focuses on the specific investigation and remediation plans that will lead to design documents and subsequent actions; and (3) problem planning, the level at which specific data needs are identified, remediation goals are specified, and technologies are applied. Site problems are generally associated with discrete waste units or parts of discrete waste units, while operable units are an aggregation of site problems.

A phased response strategy can be established for an entire facility, an operable unit, or a subset of site problems. The strategy can also be developed as response activities are first initiated or at any point in the process after source planning or fieldwork has occurred. For example, at a facility with established operable units, a DOE project manager or designee and the extended project team can identify what site problems within an operable unit may warrant early action and how the various early actions will be used to achieve the most efficient movement toward final cleanup. Therefore, the strategy for an operable unit could identify problems amenable to early action, the specific removal and remedial authorities that will be used to support investigation and action for each problem, the planned timing of the response, and issues associated with integrating the phased response and the final cleanup. In other instances, a phased response may be appropriate before a subset of site problems is formed into an operable unit, after initiating some investigation on an operable unit, or (if the problems are few enough or well enough understood) on an entire facility. Likewise, after initial development, DOE may want to revisit the strategy throughout implementation to ensure that the most efficient remediation path is maintained. The central point is that a phased response can be adapted to meet any site-specific conditions at any point in the remediation process. See Submodule 1.1, Development of a Phased Response Strategy, for additional detail.

Regardless of DOE's level of development of a phased response strategy, additional planning will be needed prior to implementing a specific early action. The exact site problem, objective, scope, and

measures of success must be defined specifically for each anticipated early action. These decisions are incorporated into a consensus memorandum or as an appendix in an existing document. A specific purpose of the consensus memorandum is to document that DOE and its regulators have agreed that a site problem requires early action. The consensus memorandum also forms the basis for an action memorandum or work plan, if necessary: for simple site problems, the consensus memorandum may even encompass the action memorandum or work plan. Like the strategy, the consensus memorandum is a short document, generally less than 10 pages. See Submodule 1.2, Development of a Consensus Memorandum, for additional detail.

Note that the importance of pursuing a phased response in cooperation with the regulatory agencies cannot be overemphasized. Progress on a phased response cannot be ensured unless the regulatory agencies are part of the process from the earliest scoping steps and kept informed of or involved in every major decision. A phased response has to be a joint effort by DOE and the regulatory agencies because moving a facility, operable unit, or subset of site problems more quickly to effective risk reduction requires more aggressive use of available data, making decisions earlier in the process, and proceeding on the basis of less complete analyses and less formal documentation because solutions are more obvious. Although DOE has authority to act on its own for some removal actions, in reality DOE needs to coordinate even these removal actions very closely with EPA and the states, because all parties have an interest in ensuring that removal actions are consistent with and will not preclude the envisioned final actions. The need to involve the regulatory agencies in early remedial actions is even more direct, because EPA will have to sign the ROD.

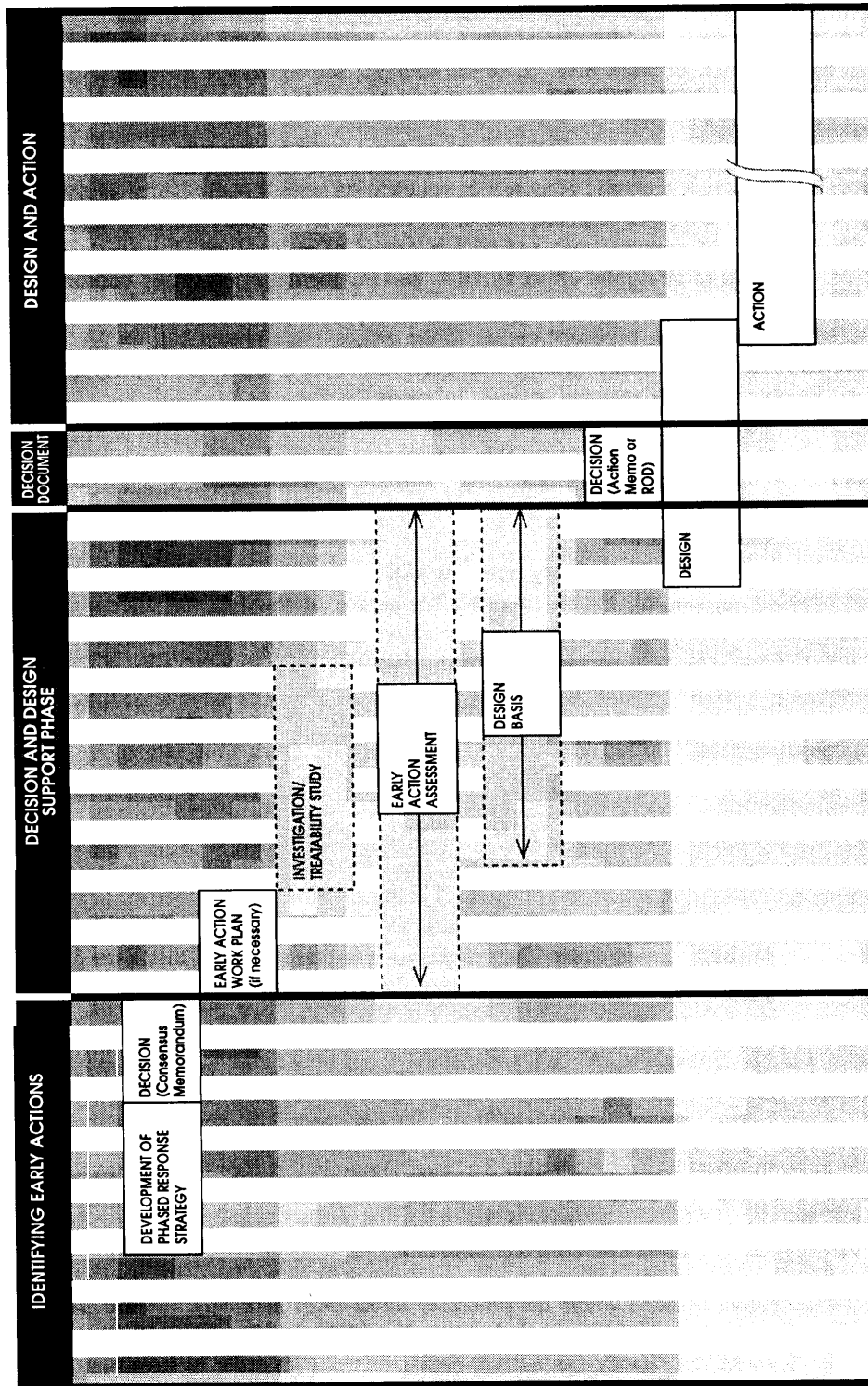
Forming a cooperative approach with the regulatory agencies will in some instances not be straightforward. Past working approaches, the requirements/limitations of an FFA, and differing philosophies of remediation can affect the formation of cooperative relationships. However, the benefits of cooperatively achieving a phased response should be sufficient incentive to overcome most difficulties and allow appropriate compromises in the interest of progress.

Although retaining a cooperative relationship is good, it does not absolve DOE from remaining consistent with FFAs; permits under RCRA/Hazardous and Solid Waste Amendments, Clean Water Act, or other authorities; and administrative orders issued by states or EPA. It is critical, therefore, when negotiating orders or agreements, or applying for permits, that DOE and the regulatory agencies build in the flexibility needed to allow streamlining of actions, while still remaining consistent with CERCLA and the NCP.

The CERCLA process for early actions is structured differently than the process for a comprehensive RI/FS/RD/RA. Figure 1 of the Introduction shows the process as it is presented and discussed in this guidance. The listing below describes in broadest terms where the various stages are addressed in the document.

Identifying Early Actions Phase	Module 1	Phased Response Strategy
	Module 2	Contingent Removal Action Approaches
Decision and Design Support Phase	Module 3	Time-Critical Removal Actions
Decision Document Phase	Module 4	Non-Time Critical Removal Actions and Early Remedial Actions

The Decision and Design Support Phase is where the processes differ most markedly. In the comprehensive RI/FS/RD/RA process, this phase includes only the RI/FS and Proposed Plan, with no design efforts under way (because the remedy has not yet been selected). In order to streamline the early action process, this document encourages beginning the design efforts as early as practicable, during the efforts to reach the remedy selection decision, rather than waiting until the Decision Document has been signed. This is possible because the specific actions to be undertaken are less uncertain than during an RI/FS. Module 4 explains the advantages of this approach and how it can be implemented.



Figure

Introduction. Note on NCP Preamble Excerpt on Early Actions (continued)

The following excerpt from the NCP Preamble illustrates that it supports the development and implementation of a Phased Response by means of remediation.

Federal Register/Vol. 55, No. 46
Thursday, March 8, 1990
Rules and Regulations
(Pages 8703-8706)

3. Management principles. Many commenters urged greater emphasis on the program management principles of a bias for action and streamlining that appeared in the preamble to the proposed rule. These commenters generally believe application of these principles would expedite cleanups and maximize reductions in risks to human health and the environment.

Many commenters advocated applying the streamlining principle to **screen** unnecessary /duplicative/impracticable remedial action alternatives and to ensure that the detail of the RI/FS for a site is commensurate with the overall risk posed by the site. Several commenters stated that an application of the bias for action principle would encourage early action to prevent further migration of contamination pending the completed remedial action. Consistent with this principle, a commenter suggested revising the first sentence of § 300.430(a) to state that the purpose of the remedial action process is to reduce risk “as soon as site data and information make it possible to do so.” EPA agrees with this recommendation and has added this language in a new second sentence in § 300.430(a).

EPA has incorporated the program management principles into today’s rule in response to the supportive comments received. EPA believes placement of these principles into today’s rule promotes making sites safer and cleaner as soon as possible, controlling acute threats, and addressing the worst problems first.

One commenter argued that EPA lacks the requisite statutory authority to promulgate principles such as a bias for action. In response, EPA was given considerable discretion in CERCLA Section 104(a)(1) to decide what action to take in response to releases of hazardous substances. In the NCP, EPA has set out provisions for taking various types of removal and remedial actions. Thus, it is clearly within EPA’s discretion to decide how to balance the need for prompt, early actions against the need for definitive site characterization. The bias for prompt action is wholly consistent with Congress’ concern that CERCLA sites be addressed in an **expeditious** manner. Indeed, in CERCLA Section 121(d)(4)(A), Congress specifically contemplated early or interim actions by allowing EPA to waive ARARs in such cases. Further, a bias for action is consistent with EPA’s long-standing policy of responding by distinct operable units at sites as appropriate, rather than waiting to take one consolidated response action.

EPA concludes that study/investigation should be focused whenever possible.

Early risk reduction is the purpose of remedial action process.

EPA has authority under Section 104 to ensure a bias for action.

Phasing of early actions with longer term actions is consistent with CERCLA.

Introduction. Note on NCP preamble Excerpt on Early Actions (continued)

The 1985 NCP originally codified this policy that remedial actions may be staged through the use of operable units.

EPA received comments urging the Agency to strengthen its commitment to early site action through expanded use of removal actions at NPL sites without foreclosing more extensive remedial actions. In response, EPA encourages the taking of early actions, under removal or remedial authority, to abate the immediate threat to human health and the environment. Early actions using remedial authorities are initiated as operable units. In deciding between using removal and remedial authorities, the lead agency should consider the following: (i) The criteria and requirements for taking removal actions in today's rule; (ii) the statutory limitations on removal actions and the criteria for waiving those limitations; (iii) the availability of resources; and (iv) the urgency of the site problem.

EPA expects to take early action at sites where appropriate and to remediate sites in phases using operable unit as early actions to eliminate, reduce or control the hazards posed by a site or to expedite the completion of total site cleanup. In deciding whether to initiate early actions, EPA must balance the desire to definitively characterize site risks and analyze alternative remedial approaches for addressing those threats in great detail with the desire to implement protective measures quickly. Consistent with today's management principles, EPA intends to perform this balancing with a bias for initiating response actions necessary or appropriate to eliminate, reduce, or control hazards posed by a site as early as possible. EPA promotes the responsiveness and efficiency of the Superfund program by encouraging action prior to or concurrent with conduct of an RI/FS as information is sufficient to support remedy selection. These actions may be taken under removal or remedial authorities, as appropriate.

To implement an early action under remedial authority, an operable unit for which an interim action is appropriate is identified. Data sufficient to support the interim action decision is extracted from the ongoing RI/FS that is underway for the site or final operable unit and an appropriate set of alternatives is evaluated. Few alternatives, and in some cases perhaps only one, should be developed for interim actions. A completed baseline risk assessment generally will not be available or necessary to justify an interim action. Qualitative risk information should be organized that demonstrates that the action is necessary to stabilize the site, prevent further degradation, or achieve significant risk reduction quickly. Supporting data, including risk information, and the alternatives analysis can be documented in a focused RI/FS. However, in cases where the relevant data can be summarized briefly and the alternatives are few and straightforward, it may be adequate and more appropriate to document this supporting information in the proposed plan that is issued for public comment. This information should also be summarized in the ROD. While the documentation of interim action decisions may be more streamlined than for final actions, all public, state, and natural resource trustee participation procedures specified elsewhere in this rule must be followed for such actions.

EPA encourages use of early actions.

EPA promotes the use of concurrent actions (e.g., removal, remedial).

Only limited data are needed to support early actions.

Risk assessment should be focused to support early action. A completed baseline risk assessment is unnecessary; qualitative risk information needs only to demonstrate that action is necessary.

Introduction. Note on NCP Preamble Excerpt on Early Actions (continued)

Several commenters endorsed placing the expectations and management principles into the rule to avoid collection of unnecessary data and evaluation of too wide a range of alternatives. Without providing a specific example, a commenter noted that many past Superfund cleanups have experienced the opposite of a bias for action by including unnecessary and costly data collection and report preparation without reaching conclusions on the recommended site remediation.

EPA agrees that site-specific data needs, the evaluation of alternatives and documentation of the selected remedy should reflect the scope and complexity of the site problems being addressed. This principle, derived from the streamlining principle discussed in the preamble to the proposal, has been incorporated into today's rule. The goal, expectations, and management principles incorporated into the rule, promote the tailoring of investigatory actions to specific site needs.

On a project-specific basis, recommendations to ensure that the RI/FS and remedy selection process is conducted as effectively and efficiently as possible include:

1. Focusing the remedial analysis to collect only additional data needed to develop and evaluate alternatives and support design.

2. Focusing the alternative development and screening step to identify an appropriate number of potentially effective and implementable alternatives to be analyzed in detail. Typically, a limited number of alternatives will be evaluated that are focused to the scope of the response action planned.

3. Tailoring the level of detail of the analysis of the nine evaluation criteria (see below) to the scope and complexity of the action. The analysis for an operable unit may well be less rigorous than that for a comprehensive remedial action designed to address all site problems.

4. Tailoring selection and documentation of the remedy based on the limited scope or complexity of the site problem and remedy.

5. Accelerating contracting procedures and collecting samples necessary for remedial design during the public comment period.

Although the level of effort and extent of analysis required for the RI/FS will vary on a site-specific basis, the procedures for remedy selection do not vary by site. The lead agency is responsible for meeting procedural requirements, including support agency participation, soliciting public comment, developing an administrative record, and preparing a record of decision.

Focusing opportunities is appropriate for any phased response.

Remedial selection procedural requirements remain intact with phased response.

Introduction. Note on NCP Preamble Excerpt on Early Actions (continued)

<p>A more streamlined analysis during an RI/FS may be particularly appropriate in the following circumstances:</p> <p>1. Site problems are straightforward such that it would be inappropriate to develop a full range of alternatives. For example, site problems may only involve a single group of chemicals that can only be addressed in a limited number of ways, or site characteristics (e.g., fractured bedrock) may be such that available options are limited. To the extent that obvious, straightforward problems exist, they may create opportunities to take actions quickly that will afford significant risk reduction.</p> <p>2. The need for prompt action to bring the site under initial control outweighs the need to examine all potentially appropriate alternatives.</p> <p>3. ARARs, guidance, or program precedent indicate a limited range of appropriate response alternatives (e.g., PCB standards for contaminated soils, Superfund Drum and Tank Guidance, Best Demonstrated Available Technology (BDAT) requirements).</p> <p>4. Many alternatives are clearly impracticable for a site from the outset due to severe implementability problems or prohibitive costs (e.g., complete treatment of an entire large municipal landfill) and need not be studied in detail.</p> <p>5. No further action or extremely limited action will be required to ensure protection of human health and the environment over time. This situation will most often occur where a removal measure previously has been taken.</p> <p>Comments varied in their support for the proposed formalization of the operable unit concept. Some commenters encouraged EPA to make full use of the operable unit concept because it could prevent the worsening of some site problems. Other commenters argued against the use of operable units, stating that Congress intended cleanups to focus on sites, not on artificial subdivisions of sites.</p> <p>The 1985 NCP originally codified the concept that remedial actions may be staged through the use of operable units (former NCP § 300.68(c)). Operable units are discrete actions that comprise incremental steps toward the final remedy. Although EPA agrees that total site remediation is the ultimate objective, often it is necessary and appropriate, particularly for complex sites, to divide the site or site problems for effective site management and early action. Operable units may be actions that completely address a geographical portion of a site or a specific site problem (e.g., drums and tanks, contaminated ground water) or the entire site. They may include interim actions (e.g., pumping and treating of ground water to retard plume migration) that must be followed by subsequent actions that fully address the scope of the problem (e.g., final ground water operable unit that defines the remediation level and restoration time frame). Such operable units may be</p>	<p>Opportunities when early actions are appropriate.</p> <p>Well-defined problems.</p> <p>Urgency.</p> <p>Alternatives are straightforward and choice is limited.</p>
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Note A: NCP Preamble Excerpt on Early Actions (continued)

Introduction. Note on NCP Preamble Excerpt on Early Actions (continued)

taken in response to a pressing problem that will worsen if not addressed, or because there is an opportunity to undertake a limited action that will achieve significant risk reduction quickly. Consistent with the bias for action principle in today's rule, EPA will implement remedial actions in phases as appropriate using operable units to effectively manage site problems or expedite the reduction of risk posed by the site.

One commenter perceived operable units as a source of inefficiency. This commenter criticized the extended investigative activities associated with the production of multiple and overlapping RI/FSs on operable units for a single site. The commenter advocated completion of RI/FSs within eighteen months, absent unusual conditions, and implementing operable units only where necessary to reduce an immediate risk to human health and the environment. This latter point was supported by another commenter who feared that use of an operable unit may provide a false impression that the project is progressing rapidly and may result in greater cost due to duplication of work.

In response, EPA has established as a matter of policy the goal of completing RI/FSs (i.e., through ROD signature) generally within 24 months after initiation. EPA agrees that duplication of efforts on RI/FSs should be avoided. However, EPA supports the operable unit concept as an efficient method of achieving safer and cleaner sites more quickly while striving to implement total site cleanups. Although the selection of each operable unit must be supported with sufficient site data and alternatives analyses, EPA allows the ROD for the operable unit to use data and analyses collected from any RI/FS performed for the site. No duplication of investigatory or analytical efforts should occur when selecting an operable unit for a site.

Although supporting the operable unit concept, one commenter argued that unless EPA alleviates the administrative burdens placed on an operable unit, no bias for action will be realized. Another commenter requested clarification of the procedures required to support the initiation of action prior to completion of the RI/FS for the entire site. This commenter cautioned EPA that encouragement of early action could result in actions being taken without a proper understanding of the site. According to a different commenter, application of the streamlining principle could result in additional and unnecessary costs to potential responsible parties by accelerating contracting procedures and collecting samples necessary for remedial design during the public comment period on the RI/FS and proposed plan. This commenter feared that the samples taken before remedy selection may prove irrelevant to the final selected remedy.

Similarly, some commenters requested guidance on operable units and more specificity on implementing the streamlining concept. Some commenters suggested phased RI/FSs and limiting the collection of data. One commenter added that a properly implemented streamlining approach could result in a more focused RI/FS and would minimize the collection of unnecessary data. This commenter cautioned, however, that poorly

Phased response direction.

Risk of early actions and phased response.

Introduction. Note on NCP Preamble Excerpt on Early Actions (continued)

<p>implemented streamlining could result in insufficient data upon which to base remedy selection, shortened time frames for settlement discussions, or actions that are inconsistent with later remedial actions. In addition, another commenter noted that documentation for the remedial action must be sufficient to support a legal challenge.</p> <p>EPA acknowledges that the program management principles in today's rule are neither binding nor appropriate in every case; they must be applied as appropriate. The streamlining principle supports data collection and alternatives analyses commensurate with the scope and complexity of the site problem being addressed. The principles focus site investigations and alternatives analyses while maintaining the requirement that sufficient information be obtained for sound decision-making. The ROD for an interim remedy implemented as an operable unit does not necessarily require a separate RI/FS but instead can summarize data collected to date that supports that decision. This procedure provides an adequate basis on which to select an interim remedy and thus safeguards against taking premature action and avoids duplication among RI/FSs performed for the site. For guidance on documenting remedial action decisions, including operable units, see the Interim Final Guidance on Preparing Superfund Decision Documents (June 1989, OSWER Directive 9355.3-02).</p> <p>Some commenters focused on interim actions, implemented as operable units. These commenters stressed the important role of interim action operable units in furthering the bias for action. According to these commenters, EPA's bias for action should be codified in the regulation to communicate that interim measures may be a legitimate component of the remedy selection process. Another commenter agreed that greater emphasis is needed on the importance of interim measures and added that these interim measures should be consistent with the remedial solution likely to be selected.</p> <p>EPA encourages the implementation of interim action operable units, as appropriate, to prevent exposure or control risks posed by a site. Further actions will be taken at the site, as appropriate, to eliminate or reduce the risks posed. EPA is adding to today's rule a statement to clarify that operable units, including interim action operable units, must neither be inconsistent with nor preclude implementation of the expected final remedy.</p> <p>One commenter supported the use of interim measures, when appropriate, and argued that the implementation of these measures should not be made contingent on the selection of a final remedy. According to this commenter, the RI/FS process should consider the interim action as one of the possible remedial alternatives to achieve the long-term site goals. Similarly, another commenter stated that it strongly believes that EPA should use its available funds to achieve cleanup at the greatest number of sites, thereby saving resources and reducing overall risks, rather than trying to attain extremely low levels of risk at a smaller number of sites.</p> <p>While the bias for action promotes multiple actions of limited scale, the program's ultimate goal continues to be to implement final remedies at</p>	<p>Caution on use of early actions/phased response.</p> <p>Streamlining is optional.</p> <p>Use of interim actions.</p>
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Introduction. Note on NCP Preamble Excerpt on Early Actions (continued)

<p>sites. The scoping section of today's rule has been amended to make clear that the lead agency shall conduct strategic planning to identify the optimal set and sequence of actions necessary to address the site problems. Such actions may include, as appropriate, removal actions, interim actions, and other types of operable units. Site management planning is a dynamic, ongoing, and informal strategic planning effort that generally starts as soon as sites are proposed for inclusion on the NPL and continues through the RI/FS and remedy selection process and the remedial design and remedial action phases, to deletion from the NPL.</p> <p>This strategic planning activity is the means by which the lead and support agencies determine the types of actions and/or analyses necessary or appropriate at a given site and the optimal timing of those actions. At the RI/FS stage, this effort involves review of existing site information, consideration of current and potential risks the site poses to human health and the environment, an assessment of future data needs, understanding of inherent uncertainties in the process, priorities among site problems and the program as a whole, and prior program experience. The focus of the strategic planning is on taking action at the site as early as site data and information make it possible to do so.</p> <p><i>Final rule:</i> Today's rule includes at § 300.430(a)(1) EPA's goal for remedial actions to protect human health and the environment, maintain that protection over time, and minimize the amount of untreated waste. In addition, the rule also sets out expectations regarding the extent to which treatment is likely to be practicable for certain types of situations and problems frequently encountered by the Superfund program. These expectations place priority on treating materials that pose the principal threats at a given site. The expectations also acknowledge that certain technological, economic, and implementation factors make treatment impracticable for certain types of site problems and that other types of controls may be most effective in these situations. The bias for action and streamlining principles are also printed in the rule.</p>	<p>Development of a site management strategy should be early.</p> <p>Strategy should include the extended project team. This is the basis for the phased response strategy (see Module 1). Consideration of current and potential risks is an appropriate RI/FS activity to help set priorities for site problems.</p>
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